Trial decision

Invalidation No. 2018-800103

Demandant	Nihon BTA Co., Ltd.
Patent Attorney	SATO, Yoshihiro
Demandee	Kyushu University
Patent Attorney	KONISHI, Tomimasa
Patent Attorney	NAKAMURA, Tomohiro
Demandee	National Institute of Technology
Patent Attorney	KONISHI, Tomimasa
Patent Attorney	NAKAMURA, Tomohiro
Intervenor	Ayabo Corporation
Patent Attorney	KONISHI, Tomimasa
Patent Attorney	NAKAMURA, Tomohiro

The case of trial regarding the invalidation of Japanese Patent No. 4951788, entitled "STRUCTURE AND METHOD OF ARRANGING GUIDE PORTION OF TIP END TOOL FOR DEEP HOLE BORING" between the parties above has resulted in the following trial decision.

Conclusion

The trial of the case was groundless.

The costs in connection with the trial shall be borne by the demandant.

Reason

No. 1. History of the procedures

The present case is that the demandant requests invalidation of the patent for the invention according to Claims 1 and 2 of Claims 1 to 9 of the scope of claims of Japanese Patent No. 4951788 (hereinafter referred to as the "Patent"), of which patentee is the demandee. The history of the procedures is outlined as follows.

December 26, 2008	Application relating to the Patent (Japanese Patent
Application No. 2008-334663)	
March 23, 2012	Registration of establishment (Japanese Patent No.
4951788)	
August 15, 2018	Submission of written request for invalidation trial
(hereinafter referred to as the "written request") (Invalidation No. 2018-800103)	
December 3, 2018	Submission of written reply for trial case
(hereinafter referred to as the "written reply")	
January 29, 2019	Submission of (Demandee side) an application for
intervention	
February 16, 2019	Submission of (Intervenor) written amendment
March 6, 2019	Submission of (Demandant) written opinion
Dated March 25, 2019	Decision on acceptance or non-acceptance of
intervention	
Dated April 22, 2019	Notification of matters to be examined
May 14, 2019	Submission of (Demandant) Oral proceedings
statement brief (hereinafter, referred to as the "demandant brief")	
June 7, 2019	Submission of (Demandee) Oral proceedings
statement brief (hereinafter, referred to as the "demandee brief")	
June 21, 2019	Oral proceeding

No. 2. The patent invention

The inventions according to Claims 1 and 2 of the scope of claims of the Patent are identified as follows, in view of the descriptions of the Description (hereinafter referred to as the "Description"), the scope of claims, and the drawings (hereinafter referred to as "the Drawings") attached to the application for the Patent, as specified by the matters described in Claims 1 and 2 of the scope of claims, and the descriptions thereof

are as follows (hereinafter, the inventions according to Claims 1 and 2 are respectively referred to as "Patent Invention 1" and "Patent Invention 2").

"[Claim 1]

A structure of arranging a guide portion, at a tip tool for performing deep hole boring while being supplied with the cutting oil, which receives cutting force of a blade portion while generating a gap through which cutting oil passes by contacting with a hole inner surface of work on a periphery of a tool, wherein

the three guide portions are arranged on the tip tool periphery, a center position in a rotational direction of the part farthest in a tool radial direction from the tool rotation center of the guide portion with respect to the blade portion, with a cutting edge position of the blade portion with respect to the tool rotation center being 0; a first guide portion that is a position rotated by $90^{\circ} \pm 10^{\circ}$ in a direction receiving cutting force of the blade portion, a second guide portion that is at a position rotated by $180^{\circ} \pm 10^{\circ}$; and a third guide portion in which a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion is positioned within an angle range in which a rotation angle from the cutting edge position is 181° to 220° . [Claim 2]

A structure of arranging a guide portion, at a tip end tool for performing deep hole boring while being supplied with the cutting oil, which receives cutting force of a blade portion while generating a gap through which cutting oil passes by contacting with a hole inner surface of work on a circumference of a tool, wherein

as the guide portions, three guide portions of a first guide portion receiving main force of cutting force, a second guide portion receiving back force of the cutting force, and a third guide portion are arranged on a tip end tool periphery,

a center position in a rotational direction of the second guide portion of the part farthest in a tool radial direction from the tool rotation center of the guide portion with respect to the blade portion is a position rotated by $180^\circ \pm 10^\circ$ in a direction receiving cutting force of the blade portion, with a cutting edge position of the blade portion with respect to the tool rotation center being 0, and

the third guide portion positions a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion within an angle range in which a rotation angle from the cutting edge position is 181° to 220°."

No. 3. Reasons for invalidation, Response to the reasons for invalidation, and means of proof

1. Reasons for invalidation alleged by the demandant

The demandant demands the trial decision that the patent for the invention according to Claims 1 and 2 shall be invalidated and the costs in connection with the trial shall be borne by the demandee, and alleged reasons generally as follows. Further, the demandant submitted Evidence A Nos. 1-1 to 1-7, Evidence A Nos. 2-1 to 2-13, Evidence A No. 3, and Evidence A No. 4, as means of proof.

(1) Reason for invalidation 1 (novelty)

The patent relating to Patent Inventions 1 and 2 is the same as TDA-11610-1 throwaway system 5G multiple blade trepanning head (hereinafter, referred to as the "trepanning head") according to Evidence A No. 2-1 that had been publicly known prior to the filing of the application of the case, and it was granted a patent in breach of provisions of Article 29(1)(i) of the Patent Act. Therefore, the patent should be invalidated under Article 123(1)(ii) of the Patent Act.

(2) Reason for invalidation 2 (novelty)

The patent according to Patent Inventions 1 and 2 is the same as the trepanning head according to Evidence A No. 2-1 that had been publicly worked prior to the filing of the application of the case, and it was granted a patent in breach of provisions of Article 29(1)(ii) of the Patent Act. Therefore, the patent should be invalidated under Article 123(1)(ii) of the Patent Act.

(3) Reason for invalidation 3 (inventive step)

The patent according to the Patent Inventions 1 and 2 could have been easily invented by a person skilled in the art based on the trepanning head according to Evidence A No. 2-1 that had been publicly known or had been publicly worked prior to the filing of the application of the case, and it was granted a patent in breach of provisions of Article 29(2) of the Patent Act. Therefore, the patent should be invalidated under Article 123(1)(ii) of the Patent Act.

2. Demandee's reply relating to the reasons for invalidation

The demandee demands, in the written reply, the trial decision that the demand for trial that the patent for Patent Inventions 1 and 2 shall be invalidated is groundless, and

that the costs in connection with the trial shall be borne by the demandant. Further, the demandee submitted Evidence B No. 1 to Evidence B No. 5 as means of proof.

3. Means of proof

The demandant submitted the following Evidence A No. 1-1 to Evidence A No. 2-13 together with the written request, as means of proof, and submitted the following Evidence A No. 3 and Evidence A No. 4 together with the demandant brief. Although documentary evidence other than Evidence A No. 2-3 and Evidence A No. 2-11, is "a copy," its notation is omitted.

Evidence A No. 1-1: Japanese Patent No. 4951788

Evidence A No. 1-2: Japanese Unexamined Patent Application Publication No. 2010-155303

Evidence A No. 1-3: Notification of reasons for refusal at the examination stage of Japanese Patent Application No. 2008-334663

Evidence A No. 1-4: Microfilm of Japanese Utility Model Application No. S60-125554 (Japanese Unexamined Utility Model Application Publication No. S62-35707)

Evidence A No. 1-5: CD-ROM of Japanese Utility Model Application No. H03-109212 (Japanese Unexamined Utility Model Application Publication No. H05-53812)

Evidence A No. 1-6: Microfilm of Japanese Utility Model Application No. S55-31738 (Japanese Unexamined Utility Model Application Publication No. S56-132013)

Evidence A No. 1-7: Microfilm of Japanese Utility Model Application S56-70006 (Japanese Unexamined Utility Model Application Publication No. S57-181511)

Evidence A No. 2-1: Design drawings relating to drawing number TDA-11610-1 throwaway system 5G multiple blade trepanning head that was produced by the demandant

Evidence A No. 2-2: English-Japanese Dictionary (desktop version), issued by Kenkyusha co., ltd., 5th Edition, cover and back cover, and pages 1777 and 182

Evidence A No. 2-3: Internet homepage of the blog of JAPAN HIGH SPEED BORING CO., LTD.

Evidence A No. 2-4: Simplified figure of a plane view of a left side upper part in the design drawing of Evidence A No. 2-1

Evidence A No. 2-5: Figure obtained by rotating the drawing of Evidence A No. 2-4 by 90°

Evidence A No. 2-6: Comparison drawing between the drawing of Evidence A No. 2-5 and FIG. 3 of the drawing

Evidence A No. 2-7: Arrangement slip (original) issued on August 8, 2002 by B.T.A Co., Ltd., which is the demandant

Evidence A No. 2-8: Drawing request issued on August 8, 2002 by B.T.A Co., Ltd., which is the demandant

Evidence A No. 2-9: Sales bill of each client for RYOKO TRADING CO., LTD. and JAPAN CASTING & FORGING CORP.

Evidence A No. 2-10: Design drawing of Evidence A No. 2-1 attached with Delivery (transfer) certificate by JAPAN CASTING & FORGING CORP.

Evidence A No. 2-11: Delivery (transfer) certificate by JAPAN CASTING & FORGING CORP.

Evidence A No. 2-12: A photograph of the actual trepanning head shown in the design drawing of Evidence A No. 2-1 taken from above

Evidence A No. 2-13: A photograph of the actual trepanning head shown in the design drawing 1 of Evidence A No. 2 taken obliquely from above

Evidence A No. 3: Japanese Unexamined Patent Application Publication No. 2008-254091

Evidence A No. 4: "Patent/Utility Model Examination Guideline," "Chapter II Patent requirements, No. 2 Novelty/Inventive step," Page 17, 4 (*) Suggestions in the content of cited invention" (*:4 in a circle)

Further, the demandee submitted the following Evidence A No. 1 to Evidence B No. 5, in the demandee brief, as means of proof. Also, Evidence B No. 3 to Evidence B No. 5 are reference materials (see the column "Demandee 3" of the oral proceedings statement brief).

Evidence B No. 1: Examination Guideline No. III Chapter 2, Section 1 Novelty Page 1

Evidence B No. 2: Technical explanation of the patent invention

Evidence B No. 3: "Fundamental study on rifling mark generating phenomena in BTA deep hole drilling process" Transactions of the JSME (in Japanese) (C edition) Volume 75, No. 755 (2009-7)

Evidence B No. 4: "Measure to prevent rifling mark generating phenomena in BTA deep hole drilling process" Transactions of the JSME (in Japanese) (C edition) Volume 76, No. 767 (2010-7)

Evidence B No. 5: Theoretical and experimental study of rifling mark generating phenomena in BTA deep hole drilling process (generating mechanism and countermeasure)

International Journal of Machine Tools & Manufacture 88 (2015) 194-205

No. 4. Allegations of the parties

Regarding Reasons for invalidation 1 to 3, the demandant and the demandee allege as follows.

The individual items of Evidence A and Evidence B are indicated as "Evidence A No. 1," etc.

1. The demandant's allegation

(1) Evidence A No. 2-1 is a design drawing whose drawing number is TDA-1160-1 produced on August 20, by B.T.A Co., Ltd., which is the demandant.

As described in the column of a title of the design drawing of Evidence A No. 2-1, the design drawing relates to a throwaway system 5G multiple blade trepanning head, and trepanning in the trepanning head means Trepanning (boring or boring apparatus) as described in Evidence A No. 2-2. As described in Evidence A No. 2-3, the trepanning head means a head when performing trepanning of deep hole boring. In Evidence A No. 2-3, it is indicated that the head is attached to a tip end of a boring base, and deep hole boring (BTA system deep hole boring) is performed.

That is, the trepanning head is a tip end tool for performing deep hole boring while being supplied with cutting oil that is described in Paragraph [0002] of the specification, and is the same as Patent Inventions 1 and 2. As illustrated on the left side upper part of the design drawing of Evidence A No. 2-1, a guide portion receiving the cutting force of the blade portion while generating a gap through which cutting oil passes by contacting with a hole inner surface of work on a periphery of a tool is disposed, and it is the same as the tip end tool of the Patent Invention in this point.

(2) As understood from the drawing of Evidence A No. 2-4, in the trepanning head of Evidence A No. 2-1, a first guide pad portion (21) is disposed at a position of 90° with reference to the position of the cutting edge 11 of the blade portion 10, a second guide pad portion (22) is disposed at a position of 180°, and a third guide pad portion (23) is disposed at a position of $180^\circ + 22^\circ = 202^\circ$. Especially, the center position of the third guide pad portion (23) is at a position of 202° , or 22° right side from a position of 180° of the center position of the second guide pad portion (22), and it is obvious that the position of 202° is included in a range of 181° to 220° of the center position of the third guide portion 23 of Patent Inventions 1 and 2.

(3) The guide pad portions in the trepanning head in the design drawing of Evidence A No. 2-1 are five portions, and are different from the number of the guide pad portions, namely 3, in Patent Inventions 1 and 2. However, as is clear from the design drawing of Evidence A No. 2-1, in the trepanning head of the tip end tool, it is obvious that a first guide pad portion (21) is disposed at a position of 90° with reference to the position of the cutting edge of the blade portion, a second guide pad portion (22) is disposed at a position of 180°, and a third guide pad portion (23) is disposed at a position of 180° + 22° = 202°, and in this point, the two are common and it is a fact that such an invention was implemented before the filing of the application of the case.

(4) The trepanning head whose drawing number is TDR-1160-1 of Evidence A No. 2-1 was delivered to JAPAN CASTING & FORGING CORP., as described in the "delivery destination" column of Evidence A No. 2-1. In practice, it was delivered to JAPAN CASTING & FORGING CORP. which is the delivery destination through RYOKO TRADING CO., LTD. which is a trading company.

Since the request for delivery of the trepanning head was received from JAPAN CASTING & FORGING CORP. via RYOKO TRADING CO., LTD., as shown in the arrangement slip (original) of Evidence A No. 2-7, the arrangement slip (correct) regarding the arrangement of delivery (production) of the trepanning head was issued on August 8, 2002 (Heisei 14) as an order number 16-1113, and the arrangement was made with the department in charge. Also, a department in charge of drawing, as described in Evidence A No. 2-1, produced the design drawing of Evidence A No. 2-1 on August 20, 2002, and as described in the arrangement slip (correct) of Evidence A no. 2-7 and the drawing request of Evidence A No. 2-8, made the drawing on August 21, 2002.

(5) As shown in Evidence A No. 2-9, the sales bill of each client for RYOKO TRADING CO., LTD. and JAPAN CASTING & FORGING CORP., on October 7, 2002, by a slip No. 19529, shows that "TDA Throwaway type trepan, 5-point guide, φ 116" was charged, and was delivered (transferred and sold) to JAPAN CASTING & FORGING CORP. through RYOKO TRADING CO., LTD. with an abstract No. 13055.

(6) B.T.A Co., Ltd. which is the demandant visited JAPAN CASTING & FORGING CORP. on September 27, 2017 with the design drawing of the trepanning head that was already delivered. As a result, the person in charge of JAPAN CASTING & FORGING CORP. proved that the actual trepanning head was delivered on October 9, 2002, as shown in Evidence A No. 2-10. Also, as shown in the delivery (transfer) certificate of Evidence A No. 2-11, the throwaway system 5G multiple blade trepanning head whose drawing number is TDR-1160-1 shown in Evidence A No. 2-1 was delivered (transferred) on October 9, 2002 from B.T.A Co., Ltd., which is the demandant, and the person in

charge of JAPAN CASTING & FORGING CORP. proved that JAPAN CASTING & FORGING CORP. used the trepanning head and also proved that there was no confidentiality obligation between B.T.A Co., Ltd. which is the demandant and JAPAN CASTING & FORGING CORP.

(7) As described above, as in Patent Inventions 1 and 2, the invention relating to the tip end tool having a structure in which in the tip end tool, regarding the guide portion arrangement, the first guide portion is disposed at a position of $90^{\circ} \pm 10^{\circ}$ with regard to the blade portion, the second guide portion is disposed at a position of $180^{\circ} \pm 10^{\circ}$ with regard to the blade portion, and the third guide portion is disposed at a position of 181° to 220° was publicly known or publicly worked in Japan prior to the filing of the application of the case.

(8) In the publication of unexamined patent application of Evidence A No. 3, it is described that the guide pad can be deleted if it is screwed, and since the five guide pad portions in the trepanning head of Evidence A No. 2-1 are fixed with bolts, they can be removed. The number of guide pad portions varies depending on the relationship with the discharge holes, and it is possible to delete two of the five guide portions (those that do not correspond to the guide portion of the Patent) as appropriate, and thus it is thought that a person skilled in the art can conceive of Patent Inventions 1 and 2.

(9) Therefore, since the trepanning head of Evidence A No. 2-1 had been publicly known prior to the filing of the application of the Patent, Patent Inventions 1 and 2 fall under Article 29(1)(i) or Article 29(2) of the Patent Act, and since the trepanning head of Evidence A No. 2-1 had been publicly worked prior to the filing of the application of the Patent, as in Evidence No. 2-7, 2-8, 2-9, and 2-11, Patent Inventions 1 and 2 fall under Article 29(1)(ii) or Article 29(2) of the Patent Act.

2. The demandee's allegation

(1) Although it is confirmed that there was a design drawing of Evidence A No. 2-1 before the filing date of the Patent and that the design drawing of Evidence A No. 2-1 had been publicly known, it is unknown whether or not the trepanning head of Evidence A No. 2-1 had been publicly used.

(2) Patent Inventions 1 and 2 were obtained as a result of analyzing the equation of motion on the premise of three guide portions in this specification, and it is obvious that the number of guide portions defined by the respective angles in Patent Inventions 1 and 2 is limited to three.

Against that, in the trepanning head shown in Evidence A 2-1, the five guide portions are disposed on substantially the same imaginary plane as the blade portion, and

it is thought that all of these five guide portions receive the cutting force of the blade portion.

Therefore, in the point that the five guide portions are provided, the trepanning head shown in Evidence A No. 2-1 does not match the requirement that "three guide portions are arranged on the periphery of the tip end tool" defined in Patent Inventions 1 and 2. Hence, it cannot be said that the trepanning head shown in Evidence A No. 2-1 discloses Patent Inventions 1 and 2. In other words, the invention shown in Evidence A No. 2-1 and Patent Inventions 1 and 2 are not the same invention, and Patent Inventions 1 and 2 cannot be easily conceived from the invention shown in Evidence A No. 2-1. (3) In the discussion of novelty and inventive step, although reason should be explained only based on the trepanning head shown in Evidence A No. 2-1 that is the Cited Invention, the demandant associates the figure of the Cited Invention with the Drawings and explains the reason thereof. Furthermore, in the figure of Evidence A No. 2-1, although the two guide portions are aligned in the part without a gap, in the head of such a configuration, there is not enough explanation as to what kind of opportunity there is to delete one of the guide portions while avoiding the gap, and there is no such motive.

No. 5. Judgment by the Body on the Reasons for Invalidation

1. The matters described in each piece of documentary evidence, the inventions, and the technical matters

The matters described in Evidence A No. 2-1 and Evidence A No. 2-3, the inventions, and the technical matters are as follows.

(1) The described matters of Evidence A No. 2-1

In Evidence A No. 2-1, the name of the drawing number TDA-1160-1 produced by the demandant is a design drawing (assembly drawing) for the throwaway system 5G multiple blade trepanning head, and the following matters are described.

A. In the front view on the upper left portion and the side view on the upper right portion, it is illustrated that "a cartridge 1(2)" equipped with "a cutting edge tip (outside) (6-2)" and "a cutting edge tip (inside) (6-1)" is attached to "a body (1)" by "a base clamp screw 1 (8)".

B. In the front view on the upper left, it is illustrated that "a cartridge 2 (3)" equipped with "a cutting edge tip (middle) (5)" is attached to "the body (1)" by a base clamp screw 2 (7)".

C. In the front view on the upper left portion and the side view on the upper right portion, it is illustrated that five "carbide guides (4)" are fixed on an outer periphery of "the body (1)" by "a guide clamp screw (9)". Then, it is illustrated that a center position in a rotational direction of the part farthest in a radial direction from the rotation center of "a trepanning head" of "the carbide guide (4)" with respect to "the cutting edge tip (outside) (6-2)", with a cutting edge position of "the cutting edge tip (outside) (6-2)" with respect to the rotation center of "the trepanning head" being 0, a first "carbide guide (4)" is provided at a position rotated by about 68° in a direction receiving cutting force of "the cutting edge tip (outside) (6-2)," a second "carbide guide (4)" is provided at a position rotated by about 58° in a direction receiving cutting force of "the cutting edge tip (outside) (6-2)," a second "carbide guide (4)" is provided at a position rotated by about 58° in a direction receiving cutting force of "the cutting edge tip (outside) (6-2)," a second "carbide guide (4)" is provided at a position rotated by about 180°, a fourth "carbide guide (4)" is provided at a position rotated by about 202°, and a fifth "carbide guide (4)" is provided at a position rotated by about 270°.

(2) The described matters of Evidence A No. 2-2

Evidence A No. 2-2 is an English-Japanese Dictionary issued by Kenkyusha co., ltd., and it is described that the meaning of trepanning is "drilling a round hole" and the meaning of boring is "for boring."

(3) The described matters of Evidence A No. 2-3

Evidence A No. 2-3 is the Internet homepage of the blog of JAPAN HIGH SPEED BORING CO., LTD., and the following matters are described.

A. Deep hole boring (BTA system deep hole boring) is an abbreviation for Boring & Trepanning Association (boring and trepanning), and is a deep hole cutting machining that is an important process in metal machining. High-pressure cutting oil pressurized by a pump is sent to a pressure head in contact with the work, reaches a blade through a gap between a drilled hole and a boring bar, passes through the boring bar together with cutting chips, and returns to a tank through a cutting chip holder and a magnet filter.

B. Regarding the type of head, the trepanning head is used in boring a largediameter hole in a material, and a special head for deep hole boring while leaving a center part (core material) of the hole is used.

(4) The invention of Evidence A No. 2-1

As described in Evidence A No. 2-2 and Evidence A No. 2-3, it is a matter of common general technical knowledge that the trepanning head of Evidence A No. 2-1 is for performing deep hole boring while being supplied with cutting oil. Further, it is an obvious matter that "the carbide guide (4)" of Evidence A No. 2-1 plays a role as a guide that receives the cutting force of the cutting edge while generating a gap through which cutting oil passes by contacting with a hole inner surface of work on a periphery of the trepanning head.

When the described matters of (1) above are summarized in light of the common technical knowledge and the obvious matters described above, it is recognized that Evidence A No. 2-1 describes the following invention.

"A structure of arranging a carbide guide of a trepanning head, at the trepanning head for performing deep hole boring while being supplied with the cutting oil, which receives cutting force of a cutting edge tip (outside) while generating a gap through which cutting oil passes by contacting with a hole inner surface of work on a periphery of a trepanning head, wherein the five carbide guides are arranged on a periphery of a trepanning head body, a center position in a rotational direction of the part farthest in a trepanning head radial direction from the trepanning head rotation center of the carbide guide with respect to a cutting edge tip (outside), with a tip end portion position of the cutting edge tip (outside) with respect to the trepanning head rotation center being 0; a first carbide guide that is a position rotated by about 68° in a direction receiving cutting force of the cutting edge tip (outside), a second carbide guide that is at a position rotated by about 202°; and a fifth carbide guide that is at a position rotated by about 202°." (hereinafter, referred to as the "invention of Evidence A No. 2-1")

2. Regarding Reasons for invalidation 1 and 2 (novelty)

In view of the matters, it is examined whether or not Patent Inventions 1 and 2 are the trepanning head of the invention of Evidence A No. 2-1, before examining whether or not the trepanning head of the invention of Evidence A No. 2-1 had been publicly known or publicly worked prior to the filing of the application of the case.

(1) Regarding Patent Invention 1

A. Comparison between Patent Invention 1 and the invention of Evidence A No. 2-1

When Patent Invention 1 ([Claim 1] of No. 2 above) and the invention of Evidence A No. 2-1 (1. (4) above) are compared, it is obvious that "the trepanning head (body)" of

the invention of Evidence A No. 2-1 corresponds to "a (tip end) tool" of Patent Invention 1. Hereinafter, in a similar fashion, "a cutting edge tip (outside)" corresponds to "a blade portion," "a carbide guide" corresponds to "a guide portion," "a tip end portion position (of the cutting edge tip (outside))" corresponds to "a cutting edge position (of the blade portion)," "a second carbide guide that is at a position rotated by about 90°" corresponds to "a first guide portion that is at a position rotated by 90° \pm 10°," "a third carbide guide that is at a position rotated by about 180°" corresponds to "a second guide portion that is at a position rotated by 180° \pm 10°," and "a fourth carbide guide that is at a position rotated by about 202°" corresponds to "a third guide portion positioning a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion within an angle range in which a rotation angle from the cutting edge position is 181° to 220°."

Further, "the five carbide guides are arranged on a periphery of a trepanning head body" of the invention of Evidence A No. 2-1 and "the three guide portions are arranged on the tip tool periphery" of Patent Invention 1 are common in the point that "the plurality of the guide portions are arranged on the periphery of the tip end tool."

In light of above, the two inventions are identical to and different from each other in the following features.

<Corresponding Feature A>

"A structure of arranging a guide portion, at a tip tool for performing deep hole boring while being supplied with the cutting oil, which receives cutting force of a blade portion while generating a gap through which cutting oil passes by contacting with a hole inner surface of work on a periphery of a tool, wherein

the plurality of guide portions are arranged on the tip tool periphery, a center position in a rotational direction of the part farthest in a tool radial direction from the tool rotation center of the guide portion with respect to the blade portion, with a cutting edge position of the blade portion with respect to the tool rotation center being 0; a first guide portion that is a position rotated by $90^{\circ} \pm 10^{\circ}$ in a direction receiving cutting force of the blade portion, a second guide portion that is at a position rotated by $180^{\circ} \pm 10^{\circ}$; and a third guide portion in which a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion is positioned within an angle range in which a rotation angle from the cutting edge position is 181° to 220°."

<Different Feature 1>

Regarding "the guide portion, in Patent Invention 1, "the three guide portions are arranged on the tip tool periphery," whereas, in the invention of Evidence A No. 2-1, "the five carbide guides are arranged on a periphery of a trepanning head body," and in addition to the three of a position rotated by about 90°, a position rotated by about 180°, and a position rotated by about 202°, there are "a first carbide guide that is a position rotated by about 68° in a direction receiving cutting force of the cutting edge tip (outside)" and "a fifth carbide guide that is at a position rotated by about 270°."

B. Judgment on Different Feature 1

(A) Regarding Patent Invention 1, in Claim 1, it is described that "the three guide portions are arranged on the tip tool periphery, ... a first guide portion that is at a position rotated by $90^{\circ} \pm 10^{\circ}$ in a direction receiving cutting force of the blade portion, ...; a second guide portion that is at a position rotated by $180^{\circ} \pm 10^{\circ}$; and a third guide portion in which a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion is positioned within an angle range in which a rotation angle from the cutting edge position is 181° to 220° ," and since there is no description such as "at least three are arranged", it is natural to understand that Patent Invention 1 has only three guide portion, and the third guide portion, and has no other guide portion.

(B) On the other hand, in Paragraphs [0003] to [0007] of the Description, there are the following descriptions.

In conventional BTA deep hole boring, a spiral pattern (boring mark) called a life ring mark, spiral mark, or tool mark is formed in the bored hole, as can be seen in general boring with a drill, and in this case, the roundness error will increase, leading to a decrease in product accuracy and causing product defects. In addition, when trying to obtain a hole inner peripheral surface with high roundness, additional machining such as polishing and honing and finishing treatment have been required, which problematically required labor and cost.

Regarding the spiral pattern such as the life ring mark, the tip tool and boring bar cause unstable vibration during machining, vibration of the tool causes fluctuations in the cutting amount, and furthermore, this leads to fluctuations in the contact force between the blade portion and the guide portion and the work, and machining proceeds in an unstable state. Due to such reasons, it is thought that the phenomenon that the hole cross-section becomes a polygonal shape occurs. However, previously, no effective measures were taken.

The present invention has been made to solve the above-mentioned problems, and in addition to the two guide portions each receiving the component force of the force applied to the blade portion of the tip end tool, a third guide portion that suppresses the instability of the tool is appropriately positioned to limit the variation of displacement that leads to self-excited vibration of the tool during machining by the three guide portions including the third guide portion, thereby maintaining the entire tool in a stable operating state without falling into an unstable state such as making the hole cross section polygonal, improving machining accuracy as a problem-free surface state without any life ring mark appearing on the inner surface of the hole after machining, and eliminating the need for the additional machining or finishing work, to thereby be advantageous in terms of labor and cost.

(C) Also, in the explanation of the first embodiment of Paragraphs [0026] to [0063] of the Description, the angle $\alpha 1 = 90^{\circ}$ of the first guide portion and the angle $\alpha 2 = 180^{\circ}$ of the second guide portion are fixed, and the angle range of the third guide portion that can be determined to be stable based on numerical analysis results (FIGS. 7(A) and 7(B)) when the angle $\alpha 3$ of the third guide portion is varied in the range of 181° to 270° is determined. Then, it is obvious that if the number of guide portions is different from such preconditions, the results of the analysis may be different.

(D) Then, by providing the third guide portion of $\alpha 3 = 181^{\circ}$ to 220° in addition to two guide portions of $\alpha 1 = 90^{\circ}$ and $\alpha 2 = 180^{\circ}$; that is, by providing three guide portions at respective positions, it is thought that the entire tool can be maintained in a stable operating state. Then, this is consistent with the interpretation of Claim 1 above (A). (E) Based on this, the angle of each guide portion defined in Patent Invention 1 was found as a result of analyzing the equation of motion assuming three guide portions, and the number of guide portions defined by each angle in Patent Invention 1 is limited to three.

Then, since Different Feature 1 is a substantial difference, Patent Invention 1 is not an invention of Evidence A No. 2-1.

C. Demandant's allegation

The demandant recognizes that the number of the guide pad portions in Patent Invention 1 is three, whereas the number of the guide pad portions in the trepanning head of Evidence A No. 2-1 is five and the two differ in the number of the guide pad portions, and alleges in the demandant brief that the Patent Invention falls under Article 29(1)(i) or Article 29(1)(ii) of the Patent Act by the fact that the angle ranges of the three guide pad portions match; especially, the third guide portion of the trepanning head of Evidence A No. 2-1 is at a position of $180^\circ + 22^\circ = 202^\circ$, and providing the center position of the

third guide portion 23 at a position included in the range of 181° to 220° as in the Patent had been publicly known in Japan prior to the filing of the application of the Patent and had been publicly implemented in Japan prior to the filing of the application of the Patent (No. 4. 1. (2), (3), and (7)). However, although the trepanning head of Evidence A No. 2-1 has the five guide pad portions, Patent Invention 1 makes it a specific matter to have the three guide pad portions, and thus it cannot be said that it is the same as Patent Invention 1. Accordingly, the demandant's allegation cannot be accepted.

D. Closing on Patent Invention 1

As described above, since it cannot be said that Patent Invention 1 is the trepanning head of the invention of Evidence A No. 2-1, it cannot be said that the Patent Invention 1 falls under the invention of Article 29 (1)(i) or Article 29(1)(ii) of the Patent Act, without examining whether or not the trepanning head of the invention of Evidence A No. 2-1 had been publicly known or publicly implemented prior the filing of the application of the case.

Thus, the invention according to Patent Invention 1 cannot be invalidated by Reasons for invalidation 1 and 2.

(2) Patent Invention 2

A. Comparison between Patent Invention 2 and the invention of Evidence A No. 2-1

When Patent Invention 2 ([Claim 2] of No. 2 above) and the invention of Evidence A No. 2-1 (1. (4) above) are compared, it is obvious that "the trepanning head (body)" of the invention of Evidence A No. 2-1 corresponds to "a (tip end) tool" of Patent Invention 2. Hereinafter, in a similar fashion, "a cutting edge tip (outside)" corresponds to "a blade portion," "a carbide guide" corresponds to "a guide portion," and "a tip end portion position (of the cutting edge tip (outside))" corresponds to "a cutting edge position (of the blade portion)."

Further, in the invention of Evidence A No. 2-1, it is obvious that "a second carbide guide that is at a position rotated by about 90°" receives main component of cutting force from the arrangement relationship, and thus the "second carbide guide that is at a position rotated by about 90°" corresponds to "a first guide portion receiving main force of cutting force" of Patent Invention 2. Further, in the invention of Evidence A No. 2-1, it is obvious that "a third carbide guide that is at a position rotated by about 180°" receives back force of cutting force from the arrangement relationship, and thus the "third carbide guide that is at a position rotated by about 180°" receives back force of cutting force from the arrangement relationship, and thus the "third carbide

guide that is at a position rotated by about 180°" corresponds to "a second guide portion receiving back force of the cutting force" of Patent Invention 2.

Further, "a center position in a rotational direction of the part farthest in a trepanning head radial direction from the trepanning head rotation center of the carbide guide with respect to a cutting edge tip (outside), with a tip end portion position of the cutting edge tip (outside) with respect to the trepanning head rotation center being 0""a third carbide guide that is at a position rotated by about 180°" of the invention of Evidence A No. 2-1 corresponds to "a center position in a rotational direction of the second guide portion of the part farthest in a tool radial direction from the tool rotation center of the guide portion with respect to the blade portion is a position rotated by 180° \pm 10° in a direction receiving cutting force of the blade portion, with a cutting edge position of the blade portion 2.

Furthermore, "a center position in a rotational direction of the part farthest in a trepanning head radial direction from the trepanning head rotation center of the carbide guide with respect to a cutting edge tip (outside), with a tip end portion position of the cutting edge tip (outside) with respect to the trepanning head rotation center being 0""a fourth carbide guide that is at a position rotated by about 202°" of the invention of Evidence A No. 2-1 corresponds to "the third guide portion positions a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion within an angle range in which a rotation angle from the cutting edge position is 181° to 220°" of Patent Invention 2, and "the five carbide guides are arranged on a periphery of a trepanning head body" of the invention of Evidence A No. 2-1 and "the three guide portions are arranged on the tip tool periphery" of Patent Invention 2 are common in the point that "the plurality of the guide portions including ... are arranged on the periphery of the tip end tool."

In light of above, the two inventions are identical to and different from each other in the following features.

<Corresponding Feature B>

"A structure of arranging a guide portion, at a tip end tool for performing deep hole boring while being supplied with the cutting oil, which receives cutting force of a blade portion while generating a gap through which cutting oil passes by contacting with a hole inner surface of work on a circumference of a tool, wherein

as the guide portions, the plurality of the guide portions including a first guide portion receiving main force of cutting force, a second guide portion receiving back force of the cutting force, and a third guide portion are arranged on a tip end tool periphery, a center position in a rotational direction of the second guide portion of the part farthest in a tool radial direction from the tool rotation center of the guide portion with respect to the blade portion is a position rotated by $180^\circ \pm 10^\circ$ in a direction receiving cutting force of the blade portion, with a cutting edge position of the blade portion with respect to the tool rotation center being 0, and

the third guide portion positions a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion within an angle range in which a rotation angle from the cutting edge position is 181° to 220°."

<Different Feature 2>

Regarding "the guide portion," in the Patent Invention 2, "the three guide portions are arranged on the tip tool periphery," whereas, in the invention of Evidence A No. 2-1, "the five carbide guides are arranged on a periphery of a trepanning head body," and in addition to the three of a position rotated by about 90°, a position rotated by about 180°, and a position rotated by about 202°, there are "a first carbide guide that is a position rotated by about 68° in a direction receiving cutting force of the cutting edge tip (outside)" and "a fifth carbide guide that is at a position rotated by about 270°."

B. Judgment on Different Feature 2

Regarding Patent Invention 2, there is a description that "as the guide portions, <u>three guide portions of a first guide portion</u> receiving main force of cutting force, <u>a second</u> <u>guide portion</u> receiving back force of the cutting force, and <u>a third guide portion</u> are arranged on a tip end tool periphery,

a center position in a rotational direction of the second guide portion of the part farthest in a tool radial direction from the tool rotation center of the guide portion with respect to the blade portion is a position rotated by $180^{\circ} \pm 10^{\circ}$ in a direction receiving cutting force of the blade portion, with a cutting edge position of the blade portion with respect to the tool rotation center being 0, and

the third guide portion positions a center position in a rotational direction of the part farthest in the tool radial direction from the tool rotation center of the guide portion within an angle range in which a rotation angle from the cutting edge position is 181° to 220°," and since there is no description such as "at least three are arranged", it is natural to understand that Patent Invention 2 has only three guide portions, respectively corresponding to the first guide portion, the second guide portion, and the third guide portion, and has no other guide portion.

Also, as explained in (1) B. (B) to (D) above, according to the Description, it is understood that in addition to two guide portions of $\alpha 1 = 90^{\circ}$ and $\alpha 2 = 180^{\circ}$, a third guide portion of $\alpha 3 = 181^{\circ}$ to 220° can be provided; that is, three guide portions are arranged at respective positions to maintain the entire tool c in a stable operating state. Then, this is consistent with the above interpretation of Claim 2.

Based on this, the angle of each guide portion defined in Patent Invention 2 was found as a result of analyzing the equation of motion assuming three guide portions, and the number of guide portions defined by each angle in Patent Invention 2 is limited to three.

Then, since Different Feature 2 is a substantial difference, Patent Invention 2 is not an invention of the invention of Evidence A No. 2-1.

C. Demandant's allegation

The demandant's allegation to Different Feature 2 is the same as that to Different Feature 1, and thus the demandant's allegation, as explained in (1) C above, cannot be accepted.

D. Closing on Patent Invention 2

As described above, since it cannot be said that Patent Invention 2 is the trepanning head of the invention of Evidence A No. 2-1, it cannot be said that the Patent Invention 2 falls under the invention of Article 29 (1)(i) or Article 29(1)(ii) of the Patent Act, without examining whether or not the trepanning head of the invention of Evidence A No. 2-1 had been publicly known or publicly implemented prior the filing of the application of the case.

Thus, the invention according to Patent Invention 2 cannot be invalidated by Reasons for invalidation 1 and 2.

(3) Closing on the Reasons for invalidation 1 and 2

Thus, the invention according to Patent Inventions 1 and 2 cannot be invalidated by Reasons for invalidation 1 and 2.

3. Regarding Reasons for invalidation 3 (inventive step)

In view of the foregoing, before examining whether or not the trepanning head of the invention of Evidence A No. 2-1 had been publicly known or publicly worked prior to the filing of the application of the case, it is examined whether or not Patent Inventions 1 and 2 could have been easily invented by a person skilled in the art based on the invention of Evidence A No. 2-1.

(1) Patent Invention 1

A. Comparison between Patent Invention 1 and the invention of Evidence A No. 2-1

The corresponding features and the different features between Patent Invention 1 and the invention of Evidence A No. 2-1 are as described in <Corresponding Feature A> and <Different Feature 1> of 2. (1) A. above.

B. Judgment on Different Feature 1

The demandant alleges that since the five guide pad portions in the trepanning head of Evidence A No. 2-1 are fixed with bolts and can be removed as seen in Evidence A No. 3, in the trepanning head of Evidence A No. 2-1, if necessary, it is possible to delete two of the five guide portions (those that do not correspond to the guide portion of the Patent) and a person skilled in the art can conceive of Patent Inventions 1 and 2 (No. 4. 1. (8) above).

However, since only the trepanning head with five guide pads is shown in Evidence A No. 2-1 and there is no description or suggestion that it is possible to remove two of the guide pads, it should be said that there is no motive to remove them. Further, even if there is a motive to remove, there is no reasonable reason to select and remove the two of the first carbide guide and the fifth carbide guide of the five guide pad portions. Therefore, the demandant's allegation cannot be accepted.

C. Closing on Patent Invention 1

As described above, Patent Invention 1 could not have been easily invented by a person skilled in the art based on the invention of Evidence A No. 2-1, and thus without examining whether the trepanning head of the invention of Evidence A No. 2-1 had been publicly known or publicly worked prior to the filing of the application of the case, the invention according to Patent Invention 1 cannot be invalidated by Reason for invalidation 3.

(2) Patent Invention 2

A. Comparison between Patent Invention 2 and the invention of Evidence A No.

2-1

The corresponding features and the different features between Patent Invention 2 and the invention of Evidence A No. 2-1 are as described in <Corresponding Feature B> and <Different Feature 2> of 2. (2) A. above.

B. Judgment on Different Feature 2

The demandant's allegation to Different Feature 2 is the same as that to Different Feature 1, and thus by the same reasons as the reasons described in "Judgment of Different Feature 1" of (1) B. above, it cannot be accepted that Patent Invention 2 could have easily been invented by a person skilled in the art based on the invention of Evidence A No. 2-1.

C. Closing on Patent Invention 2

As described above, it cannot be accepted that Patent Invention 2 could have easily been invented by a person skilled in the art based on the invention of Evidence A No. 2-1, and thus without examining whether the trepanning head of the invention of Evidence A No. 2-1 had been publicly known or publicly worked prior to the filing of the application of the case, the invention according to Patent Invention 2 cannot be invalidated by Reason for invalidation 3.

(3) Closing on the Reason for invalidation 3

Thus, the inventions according to Patent Inventions 1 and 2 cannot be invalidated by Reason for invalidation 3.

No. 6. Closing

As described above, the allegations and the means of proof by the demandant cannot invalidate the patent according to Patent Inventions 1 and 2.

The costs in connection with the trial shall be borne by the demandant under the provisions of Article 61 of the Code of Civil Procedure which is applied mutatis mutandis in the provisions of Article 169(2) of the Patent Act.

Therefore, the trial decision shall be made as described in the conclusion.

August 20, 2019

Administrative judgeAOKI, YoshinoriAdministrative judge:KEMMOKU, Shoji